

## **TROPICAL RAINFALL MEASURING MISSION**

**May 17, 1999 - May 23, 1999**

**DOY 137 - 143**

**Day of Mission 536 - 542**

### **TRMM MISSION OPERATIONS**

- TRMM is flying in the -X Forward direction as of 99-135, at 12:46:25z.
- The next Yaw maneuver is scheduled for May 30 (99-150).
- Delta-V maneuver #100 is scheduled for May 28 (99-148) using the ISP thrusters.
- The Beta angle range for DOY 144 to 150 is  $-14.3^{\circ}$  to  $+1.3^{\circ}$ .

### **TRMM SUBSYSTEM OPERATIONS**

#### **Attitude Control System**

On 99-139, ACS System Table #85 (Ephemeris Limits Table) was loaded to the spacecraft to widen the continuity limits for the TDRS ephemerides (Anomaly #60). After the ephemerides were accepted by the spacecraft, the nominal Table #85 was copied from EEPROM to RAM.

Delta-V maneuver #99 was successfully conducted on 99-141 at 16:01:29z and 16:47:18z, for durations of 47.75 and 27.625 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#6) was 37.7% and 34.4% respectively (62.3% and 65.6% on time). The remaining fuel is 728.699 kg and the final apogee and perigee height is 354.83 km x 347.51 km.

#### **Flight Data System (FDS)/Command & Data Handling (C&DH)**

The frequency standard continues to drift in the negative direction. It remains at x759, with a current drift rate of  $-4.36 \mu\text{s/hr}$ . The UTCF was adjusted by  $-931 \mu\text{s}$  on 99-141, at 23:34:14z, and is now 31535996.864168 sec with a current drift value of  $-205 \text{ sec}$ .

An EDAC multi-bit error occurred on 99-138 at 21:19:31z.

A Q-Channel Restart occurred on 99-142 at 12:39:06z

The flywheel dwell value (Anomaly #51) incremented to x'103' on 99-139 at 05:44:37z, x'104' on 99-142 at 07:49:00z, and x'105' on 99-143 at 16:28:44z.

#### **Reaction Control Subsystem (RCS)**

The RCS subsystem performed nominally during this period. See the ACS section for specific Delta-V information.

To reduce the drain on the Power subsystem, Catbed temperature trending revealed that 45 minutes prior to the first burn would be the best time to turn on the Catbed heaters for a Delta-V

maneuver (currently 91 minutes). Worst cases indicated that the heaters would be above the 32° C requirement ten minutes before the first burn. Delta-V #99 was the first maneuver using this time and temperatures behaved as expected.

### **Power Subsystem**

On 99-137 at 16:34:11z, TSM #32 (Battery 2 EOD SOC) failed causing RTS #13 (SPRUCONFIG) to execute. TSM #31 (Battery 1 EOD SOC) failed on 99-138 at 06:18:11z. See Anomaly Report #72 for more information. The battery SOC counters have been low for the past few weeks due to low beta angles, so the TSM failure was expected. To return the SOC counters to 100%, the Power Engineer changed the C/D ratio from 1.03 to 1.02 on 99-138 at 15:49:00z.

Battery 1 SOC reached 100% on 99-141 and Battery 2 SOC reached 100% on 99-142.

Currently the PSIB A orbit status is fixed in Day mode throughout the orbit and the EOD SOC counters have not updating since 99-137 (Anomaly #73). This is unrelated to Anomaly Report #72. Analysis has shown that the subroutine that resets the orbit status and increments the time in day and time in charge may have stopped being called. Nominally this routine is called once per second when the PSIB clock (the tick counter) is greater than or equal to the “orbit status time” (i.e. the time which the next call is desired). The values for the orbit status and the tick counter are stored in two 32-bit words. For the subroutine to be called, each word must be checked for the greater than or equal condition. The PSIB software however does not take into account rollover of the counters. A section of the PSIB memory was dumped on 99-140 to confirm this theory.

### **Electrical Subsystem**

The Electrical subsystem operated nominally during this period.

### **Thermal Subsystem**

The Thermal subsystem operated nominally during this period.

### **Deployables Subsystem**

The Deployables subsystem performed nominally during this period.

### **RF/Communications Subsystem**

The RF/Communications subsystem has performed nominally during this period.

A generic late acquisition occurred on 99-139 during the 16:11z event on TDW/SA2 (Late Acq #33). All data was recovered.

## **SPACECRAFT INSTRUMENTS**

**CERES**

CERES personnel are developing a plan for operating the instrument with the +15 V DAA anomaly. Work continues in creating the new Tables and RTSs required. Testing with the new RTSs occurred on 99-138 and 99-140.

On 99-137, CERES was powered ON for a ground test with Hawaii. Below is a list of commanding.

Activity	Time
Power ON	99-137-18:39:17z
Solar Calibration	99-137-22:59:54z
Internal Calibration	99-138-00:55:00z
Power OFF	99-138-02:50:42z

The next power on for CERES is scheduled for June to coincide with an Australia ground test.

**LIS**

LIS performed nominally during this time period.

**PR**

PR performed nominally during this time period. The list of Internal Calibration times for the week is listed below:

1999:137:21:46:56-21:49:08z  
 1999:138:14:05:07-14:09:42z  
 1999:138:22:09:41-22:11:44z  
 1999:139:20:58:03-21:00:12z  
 1999:140:19:46:28-19:48:42z  
 1999:141:20:08:50-20:10:58z  
 1999:142:12:27:23-12:29:47z  
 1999:142:18:57:41-18:59:54z  
 1999:143:19:20:30-19:22:38z

**TMI**

TMI performed nominally during this time period.

**VIRS**

VIRS performed nominally during this time period.

**GROUND SYSTEM**

Y2K testing has been completed on string 3. String 3 operational readiness testing will be performed after completion of rollover testing. String 2 remains the prime Mission Planning string for normal spacecraft operations.

Due to a TDE view period being shifted, the MOC acquired late (2 minutes and 39 seconds) on an event on 99-141 at 19:00:00z. All data was recovered. See Event Report #103 and TTR #20888 for more information.

### **Event Reports**

# 103: Late Acquisition Due to Shifted TDE View.

### **Generic Late Acquisition Reports (for TTRs 19639)**

# 33: TDW/SA2: 99-139 at 16:11z event 1 minute 19 seconds.

### **New Anomaly**

#72 : TSM #32 Battery 2 End of Day State of Charge Tripped.

#73 : PSIB Side A Orbit Status Unchanged.

### **Recurring Open Anomalies**

#51 - Primary S/C TC Mode.

#60 - EPV Failed Continuity.

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